


GLOSSARY OF TERMS
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OF THE
ROYAL COMMISSION
ON
ELECTRIC POWER PLANNING

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GLOSSARY

Accelerating Power - the difference between the mechanical input power delivered to the shaft of the generator and the electrical output power of the generator.

Actinides - heavy elements with an atomic number greater than 89. The name is derived from Actinium, the first of the series and includes uranium (U) and plutonium (Pu).

Actual In-Service Date - this is the date when a project or each stage of a project has had its acceptance tests completed and is declared available for service at maximum continuous rating.

Actual Reserve - the total generation actually available for operation plus firm purchase contracts minus the firm peak demand at the time.

Adjusted Forced Outage Rate - is an expansion of the Forced Outage Rate to include the effects of forced derating time expressed as equivalent total forced outage time plus the forced or unscheduled extensions to Maintenance Outages and Planned Outages.

Aeolian Vibration - wind induced low amplitude oscillations that frequently occur on the conductors and overhead skywires of all transmission lines. Peak to peak amplitudes up to about one conductor diameter have been observed at frequencies up to 150 Hz.

Alpha Particle - a positively charged particle emitted by a radionuclide and composed of two protons and two neutrons.

Alternating Current - current that reverses its direction of flow at regularly recurring intervals of time.

Amenity - a natural or man-made feature which contributes toward a pleasant environment.

Ampere - a unit of measurement for the flow of electrical current.

Apparent Power - the product of the total amperes and the volts. Apparent power is composed of both real power (volts times current in phase with the volts) and reactive power (volts times current out of phase

with the volts). Only real power is capable of doing work.

Area and Regional Supply - this comprises the facilities from the low voltage side of the receiving terminal stations to, and including, the transformer stations which step voltage down to sub-transmission or distribution voltage in the 13.8 kV to 44 kV range. Area supply facilities may include 230 to 115 kV transformer stations.

Atomic Mass - the mass of a neutral atom compared with 1/12th of the mass of the carbon-12 atom.

Atomic Number - the number of protons in the nucleus of an atom. The atomic number establishes an atom's chemical identity.

Atoms - atoms are the basic building blocks of all substances and cannot be broken down further by chemical means. Each has a nucleus surrounded by one or more orbital electrons. Each element has its own distinctive arrangement of electrons and protons in its atom (see Element).

Authorized - an authorized project is one for which final approvals to proceed with final design and construction have been obtained from all the appropriate approving authorities. Commitment of final design and construction follows authorization of the project.

Automatic Generation Control - a method of automatically controlling the power output of selected major generating stations from a central control point to maintain the desired system frequency and the scheduled power transfer on transmission lines interconnecting with neighbouring utilities.

Autotransformer - a power transformer with a single main winding per phase with both primary and secondary connections made to the single winding.

Availability Factor - the percentage of total time in a specified period that a unit was available to operate (at any load).

Available Time - time that a unit is operating, plus the time that the unit is available but not operating.

Background Radiation - the natural ionizing radiation of man's environment including cosmic rays from outer

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space, naturally radioactive elements in the ground,
and naturally radioactive elements in a person's body.

Base Load Generation - this is generation which
operates or is capable of operating at full output
most of the time that it is available.

Beta Particle - electrons emitted from a radionuclide
during beta decay or by the decay of a neutron into a
proton.

Billing Demand - the maximum demand measured during
the billing period (normally one month) adjusted for
power factor, losses, previous maximum etc. as
applicable.

Billing Load - the maximum peak load of any customer
in any month in which he is billed.

Black Lung - an occupational disease caused by
inhaling coal dust.

Blackout - a power supply situation where available
generation is not sufficient to supply the demand and
customer load is interrupted either intentionally or
automatically.

Boiling Water Reactor (BWR) - a nuclear power reactor
cooled and moderated by light water. The water is
allowed to boil in the core to generate steam which
passes directly to the turbine.

Branch - denotes the first principal sub-division of
the corporate organization structure below the level
of Vice-President, and applies to seven major areas of
the Corporation's activity, each headed by a General
Manager:

i.e. Design & Construction)	in the Eng. &
Operations) Oper. Group
Computers)
Finance) in the Resources
Personnel) Group
Services)
Regions & Marketing) in the Distribu-
	tion Group

Brownout - a power supply situation where customer
demand exceeds, or is expected to exceed, the
generation available and where load reduction is

obtained by methods which do not require interruptions to customer supply, such as: public appeals for reduced use of power, voltage reductions, and power rationing.

BTU (British Thermal Unit) - a standard unit of heat used in measuring the available heat energy of fuels.

Bulk Power Costs - total annual cost, as determined by the Corporation, of operating, maintaining and administering the bulk power system consisting of generating, transforming and transmitting facilities and including those costs associated with the Corporation's regulatory responsibilities.

Bulk Power Transmission Network - this comprises the transmission, switching, transformation and other terminal station facilities which interconnect the principal sources of power generation and the main load centres. At present Ontario Hydro's bulk power transmission network primarily uses voltage levels of 500 kV and 230 kV.

By-Product - any physical product resulting from the operations of Ontario Hydro which is not required by its mandate, for example, fly ash.

Calandria - a cylindrical reactor vessel which contains the heavy water moderator. Hundreds of tubes extend from one end of the calandria to the other containing the uranium fuel and the pressurized high temperature coolant. The reactor core consists of all of the components within the calandria.

CANDU - a Canadian developed nuclear power reactor system. The name is derived from CANada Deuterium Uranium, indicating that the moderator is deuterium or heavy water, and that the fuel is natural uranium. Pressure tubes containing the fuel and coolant run the length of the reactor vessel or calandria.

Capability Factor - the ratio of the energy which could have been delivered by a generating source over a period of time, if there were no problems or restraints external to the source, to the energy which would be delivered if the source operated continuously at Maximum Continuous Rating over the period.

Capacitance - the property of a system of conductors and dielectrics that permits the storage of electrical charges.

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1 Capacitor - a static device used to improve the power
2 factor on the power system, thereby reducing losses
3 and improving voltage levels.
4

5 Capacity - the numerical measure used to indicate the
6 extent to which a component of a power system can
7 fulfil its function. For example, a generator has a
8 certain capacity measured in Megawatts to produce
9 power, another capacity measured in Megawatthours or
10 average MW to produce energy, etc.
11

12 Capacity Factor - the ratio of the energy delivered by
13 a generating source over a certain period of time to
14 the maximum energy which could be delivered if the
15 source is operated continuously at Maximum Continuous
16 Rating.
17

18 Capture - a nuclear reaction in which a nucleus
19 absorbs an additional neutron or proton. If it is a
20 neutron the mass number of the nucleus increases by
21 one and a different isotope results; if it is a proton
22 both the mass number and atomic number increase by one
23 and a different element results.
24

25 Chain Reaction - a reaction that initiates its own
26 repetition. In nuclear fission, a neutron induces a
27 nucleus to fission and releases neutrons which cause
28 more fissions.
29

30 Circuit - a set of conductors, insulated from each
31 other three for a three phase system, two for a single
32 phase system, through which electric current is
33 intended to flow. All the conductors of each circuit
34 are generally controlled by circuit breakers or
35 switches.
36

37 Circuit Breaker - a heavy duty switch which is used to
38 switch circuits or other power system elements in or
39 out of service and which is capable of being
40 automatically opened to separate faulted elements from
41 the system.
42

43 Circulating Power - with reference to operation of
44 interconnected power systems, this is the electrical
45 power which leaves the system at one or more points of
46 interconnection and simultaneously returns to the
47 system over other interconnections.
48

49 Coal Quality (or Rank) - steam coals are generally
50 classified based on their inherent available heat
51 energy. The three major classifications are:
52
53
54
55

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Number

1 Lignite - low quality (or low Btu's)
2 Sub-bituminous - intermediate quality
3 Bituminous - high quality
4

5 Coincidence Factor - is the ratio of the maximum
6 demand of a group of customers or loads to the
7 arithmetic sum of the maximum demands of the
8 individual customers or loads.
9

10 Cold Reserve - generating capacity which is not
11 connected to the system, but which can be connected
12 and loaded within eight hours.
13

14 Combustion Turbine - sometimes referred to as a gas
15 turbine, which uses gaseous or liquid fuels.
16

17 Commercial Market Segment - represents the estimated
18 electricity consumption used in all commercial,
19 institutional and utility services, including
20 construction activities and street lighting.
21

22 Committed - a committed project is one which has been
23 authorized and for which a release has been issued for
24 work on final design, acquisition and construction.
25

26 Common-Mode Failures - a failure of two or more
27 components due to an identical fault in each
28 component.
29

30 Common-Mode Outage - the removal of a unit from
31 service for inspection as a result of failure of a
32 component in an identical unit.
33

34 Component - one of the many parts of a power system,
35 e.g. a generating unit, a transmission line, a circuit
36 breaker, etc., and also one of the many items of
37 equipment associated with each part, e.g. conductors,
38 insulators, relays, etc.
39

40 Conductor - a wire or combination of wires not
41 insulated from one another, designed to carry electric
42 current. It may be bare or insulated.
43

44 Containment - a gas-tight shell around a reactor to
45 contain radioactive products that would otherwise be
46 released to the atmosphere.
47

48 Contributed Capital - funds contributed by external
49 parties or customers toward the cost of assets owned
50 by the Corporation.
51
52
53
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55

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Coolant - a liquid or gas circulated through the core of a reactor to extract the heat of the fission process.

Core - the region in a reactor which contains the nuclear fuel.

Corona - a luminous electric discharge due to breakdown of the insulating properties of the air surrounding a conductor caused by the local voltage gradient exceeding a certain critical value.

Cosmic Rays - radiation emanating from high energy sources outside the earth's atmosphere.

Costing Load - the average of 12 monthly peak demands for any municipality or the total of these averages for all municipalities. The power district is considered as a municipality for purposes of this definition. Allowances for diversity are made within the power district.

Counterpoise - a conductor or system of conductors, arranged beneath a transmission line, located above, on, or most frequently below the surface of the earth, and connected to the footings of the towers or poles supporting the line.

Critical Mass - the minimum amount of fissile material needed to sustain a chain reaction. It depends on the geometry and enrichment of the material and the presence of a moderator.

Criticality - the instantaneous condition when a sufficient mass of a fissile material assembled in the right shape and concentration begins a self-sustaining chain reaction.

Cross-Linked Outages - are overlapping non avoidable outages occurring on two or more units resulting from a common weakness and starting within a four-hour period.

Curie - a measure of the rate at which a radioactive material disintegrates. A curie is the radioactivity of one gram of radium and is named after Pierre and Marie Curie, the discoverers of the radioactive elements radium, radon and polonium. One curie corresponds to 37 billion disintegrations per second.

Cycle - the periodic variation of an alternating voltage or current to reach a maximum from a zero

value, reverse and reach a maximum reverse value, and then return to a zero value. On a 60 hertz system one cycle takes $1/60$ of a second.

Debt - the total of outstanding bonds and notes payable, and other long-term contractual obligations.

Debt/Equity Ratio - proportions of net assets (original cost less depreciation) financed by each of debt and equity.

Debt Retirement - the statutory requirement for the repayment of indebtedness incurred by the Corporation for capital assets.

Decay - the decrease in activity of a radioactive material as it spontaneously transforms from one nuclide to another or into a different energy state of the same nuclide.

Demand - the power required to supply the load at any given time.

Dependable Hydro-Electric Peak Resource - this is the maximum net power that a hydro-electric generating unit or station can generate at least 98% of the time, for five days per week, for the following uninterrupted periods per day:

- (i) 20 minutes for the Sir Adam Beck installations.
- (ii) 2 hours for all other East System stations.
- (iii) 8 hours for all West System stations.

The 98% availability takes account of variations in water supply conditions but does not take account of equipment unavailability for any other reason.

Depreciation - an annual charge which recovers the original cost of capital facilities over their estimated useful service lives in a systematic manner.

Derating Adjusted Forced Outage Rate (DAFOR) - is an expansion of the Forced Outage Rate to include the effects of forced derating time expressed as equivalent total forced outage time.

Deuterium - an isotope of hydrogen containing one proton and one neutron in the nucleus. Chemically it is similar to hydrogen but it has different physical

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1 and nuclear properties. Its natural abundance is
2 about one part in 7,000 of hydrogen. In the form of
3 heavy water (D₂O) it is the most effective neutron
4 moderator available for reactors.

5
6 Direct Current - current which, under normal
7 conditions, continues to flow in one direction only.

8
9 Direct Customer - a customer purchasing
10 power in excess of 5,000 kW directly from Ontario
11 Hydro.

12
13 Discount Factor - see Discount Rate.

14
15 Discount Rate - a rate of interest representing the
16 time related value of resources used by Ontario Hydro.
17 It is used to convert costs which occur at any given
18 time to equivalent values at a specified time, for
19 comparison purposes.

20
21 Disintegration - see Decay.

22
23 Distributing Station - a group of electrical
24 components which receive electrical energy at
25 subtransmission voltage and which transform the
26 subtransmission voltage to a lower level of voltage
27 suitable for distributing the energy to local
28 customers by distribution feeders.

29
30 Distribution Facilities - the facilities used for
31 transmitting energy from the subtransmission
32 facilities (distributing station), or directly from
33 the transmission facilities (regional supply station)
34 where no subtransmission facilities exist, to the
35 ultimate users of energy. They include local
36 distribution lines and transformers reducing the
37 distribution voltage to the level at the customers
38 entrance.

39
40 Distribution Line - the facilities, overhead or
41 underground, at voltages as high as 34.5 kV but
42 usually below 13.8 kV, for transporting small amounts
43 of power from a distributing station or a regional
44 supply centre to the customers' local transformer.

45
46 Disturbance - severe oscillations of current, voltage,
47 and sometimes frequency on the power system.
48 Disturbances are usually caused by faults on system
49 elements and/or outages to system elements.
50
51
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Diversity - the difference between the coincident peak load for a group of customers and the sum of the non-coincident peak loads of the individual customers.

Diversity Factor - the ratio of the sum of the non-coincident peak loads of a group of customers to the coincident peak load for that group of customers.

Division - denotes the first principal sub-division of the corporate organization structure below the level of General Manager, and applies to all areas of the Corporation's activity which are headed by a Director.

NB: Some Divisions have a direct reporting relationship to a Vice-President:

i.e. Research Division to the Vice-President,
Engineering and Operations

System Planning Division to the Vice-
President, Engineering and Operations

Treasury Division to the Vice-President,
Resources

Dose - the amount of ionizing radiation energy absorbed per unit mass.

Dynamic Stability - the ability of the power system to support the applied power flows without sustained power or voltage oscillations, and to damp out oscillations resulting from system disturbances.

East System - Ontario Hydro's facilities in the area lying roughly east of Wawa.

Economic Cost - the value of resources which are given up by the selection of a particular course of action.

Economic Cost Comparison - a procedure for measuring the difference in costs between alternative ways of achieving a given physical result.

Economic Power Dispatch - a method of co-ordinating the operation of all available energy sources, both steam and hydraulic, with the transmission losses on the system to arrive at the combination of plant loadings that will supply the demand at the lowest possible cost.

Elasticity of Demand - a measure of the degree to which consumption of a good or service changes with a

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1 change in its price, in the income of potential
2 consumers, or in the price of substitute goods and
3 services, An example would be the change in
4 consumption of electricity which would result from a
5 change in its price, in the average income of Ontario
6 residents, or in the price of oil.

7
8 Electric Energy - the energy associated with the
9 product of voltage and current over an interval of
10 time. It is measured in kilowatt-hours.

11
12 Electric Field - any region of free space where an
13 electric charge, if placed there, would have a force
14 exerted on it tending to move it.

15
16 Electricity - a term used for the electric current
17 flowing in a circuit.

18
19 Electromagnetic Force - the mechanical force
20 experienced by a current-carrying conductor when it is
21 subjected to another magnetic field.

22
23 Electromagnetic Induction - the production of a
24 voltage in a conductor by a change in the magnetic
25 field surrounding it.

26
27 Electron - an elementary particle carrying one unit of
28 negative electrical charge and having a mass equal to
29 approximately 1/1840th of the hydrogen atom.
30 Electrons determine the chemical behaviour of elements
31 and their flow through a conductor constitutes
32 electricity.

33
34 Electrostatic Induction - the production of a voltage
35 in a conductor caused by the capacitive coupling
36 between it and another conductor operating at a
37 different potential.

38
39 Element - there are 92 naturally occurring elements
40 each having its own distinctive atom. All substances
41 are made up of various chemical combinations of
42 elements (see Atoms).

43
44 Energy - this is the ability of a system of components
45 to do work. It is equal to the average power that the
46 system can sustain over an interval multiplied by the
47 time duration of the interval.

48
49 Energy Centre - a thermal generating site containing,
50 or potentially capable of containing, two or more
51 large thermal generating stations
52
53
54
55

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Energy Demand - the average power required to supply the load over a stated interval of time.

Energy Load - is energy measured at the point of delivery.

Enriched Fuel - nuclear fuel containing more than the natural abundance of fissile atoms.

Equity - the excess of assets over liabilities, made up of equity funds provided by customers in the price payable for power, and the contributions from the Province of Ontario as assistance for rural construction.

Equivalent Forced Outage Rate - is an expansion of the Forced Outage Rate to include the effects of forced deratings greater than 2 per cent of the maximum continuous rating expressed as equivalent total forced outages. This is a US Standard; Ontario Hydro prefers "Derating Adjusted Forced Outage Rate".

Escalation - the increase in specific categories of wages and prices over time usually expressed as a compound interest rate or as an index.

Exposure Hours - is the sum of operating hours and forced outage hours.

Externalities - costs or benefits resulting from production which are not reflected in prices set, for example, costs resulting from cleaning clothing to remove smokestack effluents or benefits resulting from more productive fish hatcheries adjacent to GS water outlets.

Extra High Voltage (EHV) - this is any voltage in the range of 300 kV to 800 kV.

Farm Rate Class - includes all electrical services to the farm residences and all buildings and equipment used in the production and processing of farm products, on a continuing basis, in rural areas only.

Fast Breeder Reactors (FBR) - a reactor in which fast neutrons sustain the fission chain reaction. The fuel is enriched and a blanket of fertile material surrounding the core captures neutrons to become fissile.

Fast Neutrons - neutrons resulting from fission that are not intentionally slowed down by a moderator.

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Fault - a failure of insulation on a power system component which results in extremely high current flow and very low voltage. The component must be isolated immediately to minimize its effect on the system.

Fault Current - an electric current that flows from one conductor to ground or to another conductor owing to an abnormal connection (including an arc) between the two.

Feeders - the subtransmission lines or local distribution lines forming the main stream for the flow of energy.

Fertile Material - potential nuclear fuels which can be transformed in a reactor into fissile material by neutron capture. Th-232 converts to U-233 and U-238 to Pu-239.

Firm Demand - this is the demand which must be supplied to purchasers on a commercially continuous basis.

Firm Power - power available for use by the purchaser on a commercially continuous basis.

Fissile Material - nuclear fuels in which the nuclei, when hit by neutrons, split and release energy plus further neutrons which can result in a chain reaction. U-233, U-235 and Pu-239 are examples of significant fissile materials, but only U-235 occurs naturally.

Fission - the splitting of a heavy nucleus into two parts (see Fission Products) accompanied by the release of energy and two or more neutrons. It may occur spontaneously or be induced by capture of bombarding particles, particularly neutrons.

Fission Products - the smaller nuclei formed by the fission of heavy elements. Over 300 different stable and radioactive fission products have been identified. They represent isotopes of some 35 different chemical elements ranging from zinc-72 to gadolinium-160.

Five Minute Reserve - generating capacity which can be made available and loaded in five minutes. Five-minute reserve includes both spinning reserve and non-spinning reserve.

Forced Derating - a reduction in unit power below The Maximum Continuous Rating as a result of the forced outage of an item of equipment. This also includes

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1 the derating during start-up following any forced
2 outage of the unit.

3
4 Forced Outage - an outage whose starting time is not
5 postponable beyond the next weekend.

6
7 Forced Outage Rate (FOR) - is a measure of the
8 incapability of a generating unit to produce energy
9 due to forced outages. It is defined as the ratio of
10 forced outage hours to exposure hours. (Exposure
11 hours is the sum of operating hours and forced outage
12 hours.)

13
14 Forecast Error - error involved in predicting future
15 events.

16
17 Forecasting Inaccuracy - the difference between
18 forecast events and conditions and actual outcomes.

19
20 Forecasting Model - a mathematical relationship or set
21 of relationships used in forecasting.

22
23 Frequency - the number of occurrences of an event in a
24 given period. For alternating current, the frequency
25 is given in cycles per second, more commonly expressed
26 as hertz, Hz.

27
28 Fuel Bundle - an assembly of metal tubes containing
29 nuclear fuel pellets ready for insertion in a reactor.

30
31 Fuel Burnup (Nuclear-Electric Units) - the reactor
32 heat produced by a unit mass of uranium in that fuel
33 discharged from the reactor.

34
35 Fuel Calorific Value (Fossil-Electric Units) - total
36 heat produced by complete combustion of a unit mass of
37 fuel.

38
39 Fuel Pellets - Uranium dioxide, or other nuclear fuel
40 in a powdered form, which has been pressed, sintered
41 and ground to a cylindrical shape for insertion into
42 the sheathing tubes of the fuel bundle.

43
44 Fuel Sheath - tubing into which fuel pellets are
45 inserted and sealed to make a fuel element. A number
46 of elements are assembled to make a fuel bundle.

47
48 Fuelling Machine - equipment used to load and unload
49 fuel bundles. CANDU fuelling machines are remotely
50 controlled and load the fuel while the reactor is
51 operating.

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Galloping - wind induced large amplitude oscillations that occasionally occur on the conductors and overhead ground cables of many transmission lines. Peak to peak amplitudes up to about 40 feet have been observed at frequencies below 1 Hz. Galloping normally occurs only on ice-coated conductors.

Gamma Rays - high energy, highly penetrating, short wave length electromagnetic radiation emitted by the nuclei of many radioactive atoms during radioactive decay. The rays are absorbed by dense materials like lead.

Gas Cooled Reactor - a nuclear reactor in which a gas, such as carbon dioxide, is used as the coolant.

Gas Insulated - those parts of an apparatus or system which use a gas other than air for electrical insulation. For example, sulphur hexafluoride gas (SF₆) is often used for this purpose.

Gas Insulated Switchgear - an assembly of circuit breakers, switches and buses electrically insulated by pressurized gas (usually sulphur hexafluoride) enclosed in an outer metallic casing at ground potential.

General Rate Class - includes electrical services to all industrial, commercial and institutional premises including all bulk-metered multiple dwelling units and direct customers.

Generating Station - a centre for producing electrical energy.

Generating Unit - all the facilities at a generating station which are associated with a generator, and which are needed if the generator is to produce power.

Generation - the term describing the output of all generators on the system, and sometimes including the power purchases from other companies.

Generator - a device which, when driven mechanically, produces electrical power.

Genetic Effects - effects that produce changes to egg or sperm cells and thereby affect the offspring.

Governor - a device which controls the power output of a generator connected to a power system and which will

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1 automatically control the speed of the generator if it
2 becomes separated from the main power system.

3
4 Grants In Lieu - is the payment made to Municipalities
5 in lieu of property and business taxes which Hydro is
6 exempted from paying.

7
8 Gross Generation - the total energy delivered from the
9 terminals of the unit generator for a specified time
10 interval. During the specified time interval, only
11 the periods during which the unit is synchronized and
12 there is a positive generation are considered.

13
14 Gross Margin - this is the difference between the
15 capacity of a component (or group of components) and
16 the maximum actual or expected use of it. For
17 example, the gross margin of a generating system may
18 be stated as the difference between the dependable
19 peak capacity of the system and the maximum peak load
20 it carried or that it is forecast to carry in a
21 specific year.

22
23 Half Life - the time taken for half the atoms of a
24 radioactive substance to disintegrate; hence the time
25 to lose half its radioactive strength. Each
26 radionuclide has a unique half life ranging from
27 millionths of a second to billions of years.

28
29 Heat Exchanger - a piece of apparatus that transfers
30 heat from one medium to another. A typical example is
31 the steam generator in the CANDU system where the hot
32 pressurized heavy water coolant is used to convert
33 ordinary water into steam to run the turbine.

34
35 Heavy Water - a form of water composed of Deuterium
36 and Oxygen, instead of Hydrogen and Oxygen.

37
38 Hertz (Hz) - the unit of alternating current
39 frequency, one cycle per second.

40
41 Horsepower (hp) - this is a measurement of the rate of
42 doing work, and is basically the amount of work
43 required to raise 550 pounds 1 foot in 1 second.

44
45 Hydraulic - pertaining to water.

46
47 Hydro-electric - development of electricity from
48 falling water.

49
50 Impedance - the characteristics of electrical
51 conductors which oppose the flow of alternating
52
53
54
55

current. The net effect of the resistance and reactance.

Inadvertent Energy - the unintentional flow of power over the tie lines between Ontario Hydro and the neighbouring utilities.

Incapability - energy not produced by a generating unit because of problems with the unit.

Incapability Factor - the Total Incapability divided by the Perfect Net Output.

$$\text{Incapability Factor} = \frac{\text{Total Incapability}}{\text{Perfect Net Output}}$$

Incremental Cost - the additional cost at a point in time that will be necessary to achieve a given result as opposed to not achieving the result at all. Also called attributable cost and avoidable cost.

Inductance - the property of an electrical circuit whereby an alternating current induces a voltage in that circuit or a neighbouring circuit.

Industrial Customers - see Direct Customer.

Industrial Market Segment - represents the estimated electricity consumption used in all secondary (manufacturing) and primary industries, including the non-residential portion of farm use.

Inflation - The general erosion of the purchasing power of money.

Injurious Affection - represents damages allowable to an owner as a result of the acquisition of an interest in land, including the loss in value to the remaining property caused by a partial acquisition.

In-Service Date - the in-service date of a unit is the date it is declared available for commercial operation. A unit is normally declared in-service when all of the three following conditions exist:

(a) The essential commissioning of the unit is complete.

(b) The unit has achieved the design Maximum Continuous Rating.

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(c) Problems encountered during commissioning have been overcome to a degree that the unit is expected to have a reliability during its first year equal to or better than the planned value for immaturity year one.

(See also Actual, Predicted and Required In-Service Date.)

Instability - the inability of a power system to maintain a state of equilibrium in the presence of a disturbing force.

Installed Capacity - the sum of the full-load continuous ratings of all the generators in a station or the system.

Installed Reserve - the total installed generation plus firm purchase contracts minus the firm peak demand at the time.

Integrated Power System - a system in which all sources and all loads are physically interconnected in such a way that power can flow from any source to any load.

Interconnection - a transmission line which can carry power across the boundaries of service areas of adjacent electric utilities.

Interest - Capitalized - the amount of gross interest related to funds used for assets under construction, and charged to capital projects. In this way, present customers are not required to pay the interest cost of construction in progress which will benefit future customers.

Interest Coverage - the measure of the Corporation's ability to meet its interest obligations, calculated by dividing the sum of net income and gross interest costs by the gross interest costs.

Interest - Gross - the total interest costs associated with bonds, notes and other long-term debt.

Intermediate Load Generation - this is generation whose energy output is produced chiefly during the daytime periods. At nighttime it is shut down or operated at minimum safe loadings.

Interruptible Demand - is the demand which is the sum of the coincident interruptible loads.

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Interruptible Loads - loads which may be interrupted under contract provisions within specified times and limits in exchange for which power is sold at a discount from the firm power rate.

Interruption - the failure of the power supply to a load.

Ion - an elementary particle, atom or molecule not electrically neutral, i.e., a positive ion has lost one or more electrons. Sometimes an electron is described as a negative ion.

Ion Exchange - the recovery of products or removing impurities from solutions. The substance adheres to the surface of resins in the ion exchange process.

Ionization - a process by which an atom, electrically neutral under normal conditions, becomes electrically charged by gaining or losing one or more orbital electrons. The loss of an electron produces a positive ion, while gaining one produces a negative ion.

Ionizing Radiation - has the ability to cause the ionization of the matter through which it passes.

Isotope - species of an atom with the same number of protons in their nuclei, hence belonging to the same element, but differing in the number of neutrons. The chemical qualities are practically the same but the nuclear characteristics may be vastly different - e.g., hydrogen (H_1) and deuterium (heavy hydrogen- H_2), and U-235 and U-238.

Kilovolt, Kilowatt, Kilowatthour - kilo is the prefix attached to volts, watts or watthours indicating the quantity or magnitude in units of a thousand.

Lead Time - the period between the start of planning for a project and the in-service date of the first stage. Planning for a project must commence well before environmental assessment, design and construction, so planning lead times can be quite long.

Load - a device that receives power, or the power delivered to such a device. Also, the amount of power or energy consumed by customers.

Load Carrying Capability - the demand which a system can meet with a stated probability index. The current

Line
Number

definition is the demand which can be met by a system on all but 1 day in 10 years or 2399~~9~~2400, that is all but 1 day in 10 years each consisting of 240 working days.

Load Factor - the ratio of average power delivered to an electrical load over a certain period divided by the maximum rate at which power was delivered in the period.

Loss of Load Probability Method - computes the probability index of failure to supply peak loads fully because of unscheduled forced outages of generation units due to breakdown.

Losses - the power used by the system itself due to the inefficiency of transmission lines, transformers, etc.

Low Sulphur Fuel - Coal or crude oil having 1 percent or less sulphur by weight.

Magnetic Field - a state produced in a medium, either by current flow in a conductor or by a permanent magnet, that can induce voltage in a second conductor in the medium when the state changes or when the second conductor moves in prescribed ways relative to the medium.

Maintenance Outage - an outage which can be postponed beyond the following weekend to a period of low demand.

Maintenance Outage Factor - the per cent of time in a period that a unit is on a maintenance outage.

Marginal Cost - the change in total cost of production which results when output is varied by one unit, for example, one kWh, or the avoidable cost of one more unit of production.

Market Segment - a division of the electric power market established to facilitate the analysis of the utilization of electricity as to amounts and trends.

Mass Number - the total number of protons and neutrons in the nucleus of an atom - e.g. U-235.

Maximum Continuous Rating - expressed in Megawatts. The design or tested maximum electrical output for a generating unit operating continuously.

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Maximum Demand - the highest demand during a given time period.

Median Hydro-Electric Peak Resource - this is the maximum net power that a hydro-electric generating unit or station can generate at least 50% of the time, for five days per week, for the following uninterrupted periods per day:

- (i) 20 minutes for the Sir Adam Beck Installations
- (ii) 2 hours for all other East System stations
- (iii) 8 hours for all West System stations.

The 50% availability takes account of variations in water supply conditions but does not take account of equipment unavailability for any other reason.

Megawatt, Megawatthour - Mega is the prefix attached to watts or watthours indicating the quantity or magnitude in units of a million.

Mercury Arc Rectifier - a sealed enclosure containing mercury vapour which allows electrical current to flow through it in one direction only.

Mg U - Megagrams of Uranium (1 Megagram = 1000 kg = 2204.6 lbs).

Mills/Kilowatthour - the cost of electrical energy, where "mill" represents one thousandth part of one dollar and a kilowatthour is the standard unit of energy produced or consumed.

Minimum Feasible Cost - the lowest cost attainable when all of Ontario Hydro's objectives are given their proper weight.

Moderator - the substance used to decrease the speed of the neutrons released during fission of uranium - 235 atoms so that the incidence of fission is increased.

Molecule - the smallest piece of substance that still retains the characteristics of that substance. A further subdivision would break down the substance into its constituent atoms - e.g., a molecule of water H₂O.

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Most Probable Firm Demand - the firm demand remaining after the most probable primary demand has been reduced by the interruptible demand.

Most Probable Primary Demand - this is the forecast primary demand for which it is estimated that equal probabilities exist that the actual demand will be either above or below the forecast value.

Multiplexed - a process which allows many communications signals to be transmitted simultaneously on a single circuit.

Multiplier Effect - the relationship between a change in Corporation spending and the total resulting change in such economic variables as provincial income and employment levels.

Municipal Electrical Utility - provides retail electric service in most cities, towns, and villages, and in certain townships adjacent to them.

Natural Radiation - see Background Radiation.

Natural Uranium - Uranium whose isotopic composition as it occurs in nature has not been altered (0.7 per cent by weight of U-235).

Net Income - the total revenue of the Corporation less the total cost of operating, maintaining, administering and financing the ongoing operations of the Corporation. The net income is appropriated for debt retirement and to the reserve for stabilization of rates and contingencies.

Net Output - the net energy delivered to the transmission system for a specified time interval, and a specified unit. The entire time interval is considered whether the unit is shutdown or operating.

NOTE: Net Output = Gross Generation - Unit Electrical Service where unit electrical service includes electrical energy consumed by the unit during both outage and operating periods.

Net Unit Efficiency (Fossil-Electric Units) - the net unit output divided by the total calorific value of the fuel consumed.

Net Unit Efficiency (Nuclear-Electric Units) - the net unit output divided by the reactor heat.

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NOTE: The reactor heat is the manifest heat as a result of nuclear fission for a specified time period. The energy (neutrino) which does not manifest itself as heat is excluded. The heat which arises from delayed fission product reactions and secondary nuclear reactions is included.

Network - the term used to describe a bulk power electrical system and the transmission lines which connect the system generators and loads together.

Neutron - an unchanged (neutral) elementary particle with a mass nearly equal to that of the proton and associated with it in the nuclei of atoms.

Non Spinning Reserve - generating capacity not synchronized to the system but available for synchronizing and loading.

Northeast Power Coordinating Council (NPCC) - a group of all the major interconnected utilities in Ontario, New York, New England, and New Brunswick.

Nuclear Agreement Payback - payments made to Atomic Energy of Canada Ltd. and the Province of Ontario in proportion to their capital contributions to the first two units of the Pickering Generating Station, with the payments or "payback" representing the net benefits realized from the operation and maintenance of these nuclear units as compared with equivalent coal-fired units.

Nuclear Energy - The energy liberated by a nuclear reaction such as fission.

Nuclear Fusion - the formation of a heavier nucleus from two lighter ones with the simultaneous release of large amounts of energy - e.g., two atoms of deuterium can fuse to form a helium atom.

Nucleus - the positively charged core of an atom which has almost the whole mass of the atom but only a minute part of its volume. All nuclei are made up of protons and neutrons, except for ordinary hydrogen (H_1) which contains only one proton.

Ohm - a unit of measurement for resistance to the flow of electrical current.

Operate in Parallel - the ability of one power system to operate at exactly the same average electrical

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frequency as another power system, and to remain electrically interconnected to it.

Operating Factor - the percentage of total time in a specified period that a unit was operated at any load.

Operating Reserve - that spare generating capacity which can be loaded to meet the demand within a specified time - usually five or ten minutes.

Operating Time - time that the unit is delivering energy to the grid (the unit is synchronized to the grid and the generation rate is positive).

Organic Coolant - an oil-like liquid having a high boiling point at low pressure used as coolant in the WR-1 test reactor at the Whiteshell Nuclear Research Establishment of AECL in Manitoba.

Outage - an outage occurs when a system element is separated from the system as a result of a fault or other cause. An outage may not necessarily result in an interruption to load.

Peak Load - the highest average load during a time interval of specified duration, e.g., 20 minutes, occurring during a given period of time, e.g., in a day.

Peak Load Generation - this is generation whose energy output is produced chiefly during the daily peak load periods. At other times of the day and night it is shut down or operated at minimum safe loadings.

Perfect Net Output (PNO) - the net output a unit or station can deliver with continuous operation at Maximum Continuous Rating for the specified time period.

Phase - one conductor of a polyphase (usually three phase) electrical supply.

Phase Angle - a measure of the angular difference between a given voltage on the system and a reference voltage on the same system, or between a voltage and current at the same place on the system.

Phase Shift - the angular difference between the voltages at two points in an electrical system. This angular difference is the result of the characteristics of the intervening system and the power transfer on it.

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Number

Phase Shifting Transformer - a transformer with windings connected in such a way that it can introduce a phase angle shift between the input voltage and current as compared to the output. Its usual application is in a tie line between utilities where a natural phase shift exists which would overload the tie line. The phase shifting transformer is used to compensate for some or all of this natural phase shift and thereby control the power flow across the tie.

Plan - a group of related works, or projects, which together will meet a single system requirement. The plan may comprise only one project.

Planned Outage - an outage which can be postponed from one season to another, usually for major overhauls.

Planned Outage Factor - the per cent of time in a period that a unit is in a planned outage state.

Plutonium (Pu) - a heavy radioactive metallic element with an atomic number of 94 whose principal isotope Pu-239 is a major fissile material. It is produced artificially in reactors through neutron absorption of U-238.

Poison - any non-fissionable, non-fertile substance in a reactor with a high capacity for neutron capture that decreases reactivity. Poisons are deliberately introduced to adjust the level of fission or to shut down the reactor.

Power - the rate of doing work, or in an electrical network the rate at which electrical energy is being supplied. Sometimes the word is used in a general sense, to cover both power and energy.

Power District - for costing purposes the power district is treated as the 354th cost municipality and is made up of the direct industrial group of customers and the rural retail customers.

Power Factor - a number obtained by dividing the actual power being delivered to an electrical load by the apparent power or the product of the voltage and current.

Predicted In-Service Date - this is a forecast of the date when a project or each stage of a project will have had its acceptance tests completed and will have been declared available for service at maximum continuous rating.

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Number

Present Worth - the equivalent value at a time designated as the "present" of a particular payment or receipt, or of all payments and receipts associated with a given course of action, taking into account the time-related value of resources.

Pressure Tube Reactor - a power reactor in which the fuel is located inside hundreds of tubes designed to withstand the circulation of the high pressure coolant. The tubes are assembled in a tank containing the moderator at low pressure (see CANDU).

Pressurized Water Reactor (PWR) - a power reactor cooled and moderated by light water in a pressure vessel surrounding the core. The water is pressurized to prevent boiling in a closed primary loop and is circulated through a heat exchanger which generates steam in a secondary loop connected to the turbine.

Primary Demand - this is the sum of the Firm Demand and the Interruptible Demand.

Productivity - the ratio of output to the input required to produce it, for example, the ratio of kilowatt hours produced in a year to total staff manhours used for production during that year.

Project - a single component of a plan having one main purpose and usually affecting only one property.

Proton - an elementary particle with a charge equal and opposite to that of the electron. Its atomic mass is approximately 1,840 times that of an electron. It comprises the nucleus of the ordinary hydrogen atom whose mass number is defined as one. It is a constituent of all nuclei.

Public Participation - that essential element of the planning process by which the concerns of the potentially affected public are considered in the planning of Hydro facilities. The aim is to ensure that the public's interests and priorities are incorporated from the earliest stages of planning.

Purchased Capacity - is the "Firm" power specified in contracts between Ontario Hydro and power producers.

Quality of Supply - the level of reliability of supply, the level and fluctuations of voltage, and the level and fluctuations of frequency define the quality of supply.

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Number

Rad - the unit of dose of ionizing radiation. One rad is absorbed when 100 ergs of energy is imparted to each gram of matter by ionizing radiation (see Rem).

Radiation - the emission and propagation of energy through space or matter in the form of electromagnetic waves and fast moving particles such as gamma and x-rays.

Radioactivity - the spontaneous decay of an unstable atomic nuclei into one or more different elements or isotopes. It involves the emission of particles or spontaneous fission until a stable state is reached.

Rate Class - a classification of customers established for the allocation of costs and the setting of rates to obtain revenue.

Reactance - the characteristic of electrical conductors which opposes the flow of that part of alternating current which is not in phase with the voltage, and which causes a voltage drop in the current.

Reactive Compensation - the amount of inductive or capacitive reactance added at some point in the system to control the voltage supply to the load or the power factor of the load.

Reactive Power (Vars) - a measure of the relationship between the power (watts) being delivered in a circuit from a generator to a load and the apparent power obtained by multiplying the voltage and current in the circuit (volt-amperes).

$$(\text{watts})^2 + (\text{vars})^2 = (\text{volt-amperes})^2$$

Reactivity - a measure of the departure of a reactor from criticality. A positive value means that the release of neutrons is increasing and that the power will rise, and a negative value means that the release of neutrons is decreasing, the power is falling and the chain reaction could die out.

Reactor - an assembly of nuclear fuel which can sustain a controlled chain reaction based on nuclear fission.

Real Power - synonymous with power.

Receiving Terminal Station - the facilities which receive energy from the bulk power transmission

Line
Number

1 network for delivery to the Area and Regional supply
2 and distribution facilities.

3
4 Recycling - the reuse of fissionable material in
5 irradiated nuclear fuel which is recovered by
6 reprocessing.

7
8 Regional Supply - see Area and Regional Supply

9
10 Regulating Margin - the difference between the highest
11 instantaneous load on the system and the measure of
12 peak load normally employed (e.g., the 20-minutes or
13 hour peak in Ontario Hydro's case).

14
15 Release - this is an internal Ontario Hydro document
16 which, after a project has been authorized, is issued
17 to enable specified work to proceed to completion.

18
19 Reliability - the degree of continuity of supply.

20
21 Rem - the abbreviation for Roentgen Equivalent Man,
22 the unit of an absorbed dose of ionizing radiation in
23 biological matter. It is the absorbed dose in Rads
24 multiplied by a factor which takes into account the
25 biological effect of the radiation.

26
27 Reprocessing - the extraction of fissionable material
28 from spent fuel for later use by recycling.

29
30 Required In-Service Date - this is the date when a
31 project or each stage in a project is first required
32 to fulfil system needs, and in addition, to have had
33 its acceptance tests completed and to be declared
34 available for service at maximum continuous rating.

35
36 Reserve Capacity - this is the difference between the
37 capacity of a system component (or group of
38 components) and the maximum actual or expected demand
39 placed upon it.

40
41 Reserve Margin - same as Reserve Capacity.

42
43 Residential Market Segment - represents the estimated
44 electricity consumption used in all types of
45 residences, (whether year round or seasonal, and
46 whether individually or bulk-metered).

47
48 Residential Rate Class - includes all electrical
49 services to single family dwelling units, individually
50 metered multiple dwelling units, as well as seasonal
51 (intermittent) residences.

52
53
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Line
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Resistance - the characteristics of electrical conductors which opposes the flow of that part of electrical current which is in phase with the voltage, and which causes a voltage drop and power loss in the circuit.

Resources - goods and services, such as, material, equipment, labour, land and transportation.

Return on Equity - the net income for the year as a per cent of the equity at the year-end.

Returns to Scale - the increase, or decrease, in output resulting from increasing the whole scale of productive activity rather than varying the mix of factor inputs.

Roentgen - the unit of exposure to gamma or x-rays. Named after William Conrad Roentgen, the discoverer of x-rays in Munich in 1895.

Scheduled Derating - a reduction in unit power below The Maximum Continuous Rating as a result of a planned or maintenance outage of an item of equipment. This also involves the derating during start-up following any maintenance or planned outage of the unit.

Secondary Load - is load which is sold when, as and if available from peak and energy which is surplus to primary system requirements.

Security - the capability of a power system to continue to function adequately when subjected to sudden stresses.

Sensitivity Analysis - a method of identifying the input variables for which possible inaccuracies in their forecast or assumed values may affect the validity of an economic cost comparison or the forecast of a derived variable.

Series Reactor - a conductor coil which serves to limit excessive current flow.

Shielding - a mass of material which reduces radiation intensity to protect personnel, equipment or nuclear experiments from radiation injury, damage or interference.

Shunt Reactors - a device connected between power conductors to cancel out excessive capacitive effect on a power system.

Line
Number

1 Single Contingency Loss - the forced outage of a
2 single system element either automatically or
3 manually.
4

5 Skywire - multiple-grounded wire or wires placed above
6 phase conductors for the purpose of intercepting
7 direct strokes of lightning in order to protect the
8 phase conductors.
9

10 Slow Neutrons - neutrons that have been slowed down by
11 a moderator so as to increase the probability of their
12 collision with a fissile nucleus and induce fission.
13

14 Slow Pick Up Reserve - that spare generating capacity
15 which can be made available within five to sixty
16 minutes.
17

18 Social Benefits - all the gains in welfare which flow
19 from a particular economic decision, whether or not
20 they accrue directly to the decision taking unit.
21

22 Social Costs - the costs of producing anything which
23 are borne by society as a whole, and which need not be
24 equal to the costs of the producer, for example, the
25 total cost to all the individuals and firms in Ontario
26 which result from the production of electricity.
27

28 Spent Fuel - nuclear fuel that has been irradiated in
29 a reactor to the extent that it can no longer
30 effectively sustain a chain reaction, i.e., the
31 fissionable isotopes have been consumed and fission-
32 product poisons have been accumulated.
33

34 Spinning Reserve - that spare generating capacity
35 which is synchronized to the system and which is
36 available for loading.
37

38 Stability - the ability of a power system to maintain
39 a state of equilibrium in the presence of a disturbing
40 force.
41

42 Static Electricity - a voltage that can be built up in
43 a body, such as by friction.
44

45 Station - this is a concentration of electric
46 equipment provided to operate and fulfil a specific
47 function on the electric power supply system. For
48 example, it may be a generating station (GS),
49 transformer station (TS), switching station (SS), or
50 distributing station (DS). Many utilities describe
51 all stations except generating stations as
52 "substations".
53
54
55

Line
Number

Steady State Stability - the ability of the power system to remain in equilibrium during relatively slow or normal load changes and to damp out any oscillations caused by such changes.

Street Lighting Rate Class - includes electrical services to all types of street lighting.

Substation - see Station

Subtransmission Facilities - the facilities used for transmitting energy from the transmission facilities to the distribution facilities or to local customers. They include subtransmission lines and distributing stations.

Subtransmission Line - the facilities, overhead or underground, usually at voltages between 13.8 kV and 44 kV, for transmitting power from regional supply stations to distributing stations or to local customers. These lines carry alternating current and are generally three phase.

Supply System - the transmission facilities used to connect the generation and the load.

Switching Station - a station whose function is to interconnect transmission lines through circuit breakers. Its purpose is to subdivide the transmission system to limit the amount of it that is lost as the result of a fault.

Synchronism - the state where alternating current machines are all operating at or about a stable average value of frequency.

Synchronous Condenser - a large rotating machine which will act as a shunt capacitor or a shunt reactor as its field current is adjusted. It serves as a capacitor more effectively than as a reactor.

Tertiary Windings - an additional winding introduced into a power transformer or autotransformer to eliminate undesirable harmonic frequencies and to allow connections, for station service power supplies, and for power factor correction equipment.

Thermal Efficiency - is the ratio of the electrical energy output of the unit or station to the thermal energy input expressed as a per cent. (Efficiencies of individual units are higher than the station

Line
Number

efficiency, as the latter includes fuel for all purposes such as heating, etc.).

Thermal Plant - a station for generating electrical energy from thermal sources. A thermal plant may have fossil-fuelled steam turbines or fossil-fuelled combustion turbines or nuclear steam turbines.

Thirty Minute Reserve (rarely used) - that spare generating capacity which can be made available within five to thirty minutes.

Thorium (Th) - a heavy slightly radioactive metallic element with an atomic number of 90 whose naturally occurring isotope Th-232 is fertile and the source when irradiated in a reactor, of U-233.

Thyristor - silicon controlled rectifiers (SCR's) that limit current flow to one direction only and can be switched to on or off.

Tie Line - a transmission line connection between one utility and another. (See also Interconnection.)

Tonnes U - metric tons of Uranium (1 metric ton = 2204.6 lbs.)

Total Incapability - the net energy production lost during outages and deratings including energy consumed by the unit during outage periods. Total incapability is the sum of:

- Planned Outage Incapability
- Maintenance Outage Incapability
- Forced Outage Incapability
- Scheduled Derating Incapability
- Forced Derating Incapability

It does not include;

- either energy production lost while the unit is available but not operating,

- or energy production lost while the unit is derated at the request of Power System Control.

Trade-Offs - benefits associated with one objective which are sacrificed in order to obtain benefits with respect to another, and thereby arriving at the most desirable balance between them.

Line
Number

Transformation - transforming electrical energy from one voltage to another.

Transformer - a device consisting of two or more windings of insulated electric conductors on an iron core for transferring energy from one voltage level to another.

Transformer Station - a group of electrical components to transfer energy between a set of system components operating at one voltage to another set of system components operating at a different voltage.

Transient Stability - the ability of parts of the power system to remain in synchronism following a system disturbance.

Transmission Circuit - see Circuit.

Transmission Facilities - the facilities used for transmitting energy from the generating station to the subtransmission facilities, or to distribution facilities where no subtransmission facilities exist, or to large customers. They comprise the bulk power transmission network and the area and regional supply facilities and include transmission lines, switching and transformer stations.

Transmission Line - the facilities, overhead or underground, usually at voltages of 115 kV and above, for transporting large blocks of electric power from generating plants to load distribution centres and to provide connections between load centres and interconnections with neighbouring utilities. All transmission lines on the Ontario Hydro system are alternating current, three phase, and can have one or more circuits.

Tritium - a radioactive isotope of hydrogen with an atomic number of three, it has one proton and two neutrons in its nucleus. It is produced in heavy water moderated reactors by neutron capture of deuterium.

Ultra High Voltage (UHV) - This is any voltage in the range above 800 kV.

Unit Mass Cost (UMC) - cost of heavy water expressed in dollars per kilogram.

Uranium (U) - a heavy slightly radioactive metallic element with an atomic number of 92. As found in

Line
Number

1 nature it is a mixture of the isotopes U-235 (0.7%)
2 and U-238 (99.3%). The artificially produced U-233
3 (see Thorium), and the naturally occurring U-235 are
4 fissile. U-238 is fertile.

5
6 Uranium Dioxide (UO₂) - used with the natural
7 concentration of U-235 unchanged, as the fuel in CANDU
8 power reactors because of its chemical and radiation
9 stability, good gaseous fission product retention and
10 high melting point.

11
12 Utilization Equipment - power consuming equipment used
13 by customers.

14
15 Value Added in Production - the difference between
16 total revenues from production and the cost of
17 purchased materials whether raw, semi-finished or
18 finished.

19
20 Volt - a unit of electrical pressure which tends to
21 cause the flow of electrical current.

22
23 Watt - unit of electrical power; represents the power
24 used when one ampere flows through a circuit with a
25 pressure of one volt.

26
27 West System - Ontario Hydro's facilities in the area
28 lying roughly west of Wawa.

29
30 Yellowcake - is the name of the uranium concentrate
31 produced in the mine-site mill and is shipped to the
32 refinery for further processing.

33
34 Zirconium - a naturally occurring metallic element
35 with an atomic number of 40. The material is used
36 extensively in the construction of in-core reactor
37 components because it has a very high corrosion
38 resistance to high temperature water with low neutron
39 absorption.
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